

SPIN POLARIZATION AND MAGNETIC MOMENT MEASUREMENT IN ^{35}K PRODUCED VIA SINGLE-PROTON PICKUP REACTIONS AT FRAGMENTATION ENERGIES *

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Large positive spin polarization has been observed for ^{37}K fragments produced in a single-proton pickup reaction using a primary ^{36}Ar beam at 150 MeV·A [1]. The largest values of the induced spin polarization were observed near the peak of the fragment momentum distribution, suggesting that both polarization and yield could be simultaneously optimized in the proton pickup process. We have measured the spin polarization of ^{35}K fragments produced via single-proton pickup, two-neutron removal from an ^{36}Ar primary beam incident on a ^9Be target at 150 MeV·A. Spin polarization was once again deduced to be positive near the peak of the momentum distribution, however, the magnitude of the polarization was smaller than that observed in ^{37}K fragments produced by pure proton pickup.

The spin-polarized ^{35}K nuclei were implanted into a KBr crystal placed at the center of a β -NMR magnet for g -factor analysis. The new result improves on the precision of the previously measured value [2] by an order of magnitude. The results are examined in terms of the systematic variation of the spin expectation value for mirror nuclei with isospin $T = 3/2$.

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[1] D.E. Groh *et al.*, PRL **90**, 202502 (2003).

[2] M. Schäfer *et al.*, PRC **57**, 2205 (1998).